

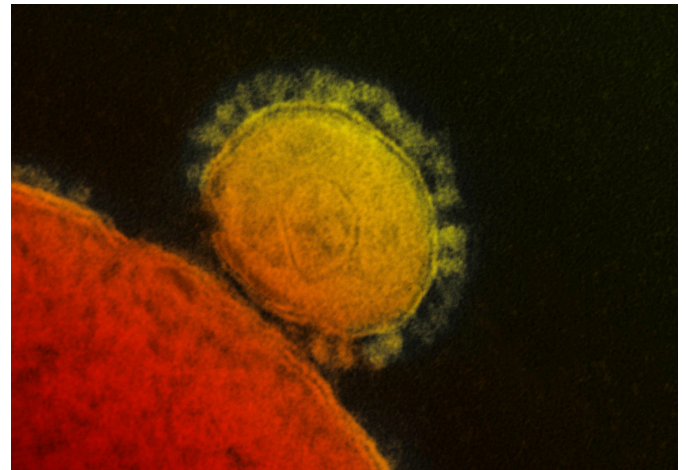
Lab-Made Coronavirus Triggers Debate

The creation of a chimeric SARS-like virus has scientists discussing the risks of gain-of-function research.

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Ralph Baric, an infectious-disease researcher at the University of North Carolina at Chapel Hill, last week (November 9) published a study on his team's efforts to engineer a virus with the surface protein of the SHC014 coronavirus, found in horseshoe bats in China, and the backbone of one that causes human-like severe acute respiratory syndrome (SARS) in mice. The hybrid virus could infect human airway cells and caused disease in mice, according to the team's results, which were published in *Nature Medicine*.



MERS coronavirus
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The results demonstrate the ability of the SHC014 surface protein to bind and infect human cells, validating concerns that this virus—or other coronaviruses found in bat species—may be capable of making the leap to people without first evolving in an intermediate host, *Nature* reported. They also reignite a debate about whether that information justifies the [risk of such work](#), known as gain-of-function research. “If the [new] virus escaped, nobody could predict the trajectory,” Simon Wain-Hobson, a virologist at the Pasteur Institute in Paris, told *Nature*.

In October 2013, the US government [put a stop to](#) all federal funding for gain-of-function studies, with particular concern rising about influenza, SARS, and Middle East respiratory syndrome (MERS). “NIH [National Institutes of Health] has funded such studies because they help define the fundamental nature of human-pathogen interactions, enable the assessment of the pandemic potential of emerging infectious agents, and inform public health and preparedness efforts,” NIH Director Francis Collins said in a [statement](#) at the time. “These studies, however, also entail biosafety and biosecurity risks, which need to be understood better.”

Baric's study on the SHC014-chimeric coronavirus began before the moratorium was announced, and the NIH allowed it to proceed during a review process, which eventually led to the conclusion that the work did not fall under the new restrictions, Baric told *Nature*. But some researchers, like Wain-Hobson,

disagree with that decision.

The debate comes down to how informative the results are. “The only impact of this work is the creation, in a lab, of a new, non-natural risk,” Richard Ebright, a molecular biologist and biodefence expert at Rutgers University, told *Nature*.

But Baric and others argued the study’s importance. “[The results] move this virus from a candidate emerging pathogen to a clear and present danger,” Peter Daszak, president of the EcoHealth Alliance, which samples viruses from animals and people in emerging-diseases hotspots across the globe, told *Nature*.

Keywords:

bats, controversy, coronavirus, gain-of-function research, infectious disease, influenza, MERS, SARS